What is claimed is:

1. A liquid ejecting apparatus comprising

a pressure-generating chamber having an inside space whose volume is changeable, into which a liquid is supplied and which is communicated with a nozzle, a resonance frequency of said pressure-generating chamber having a period of Tc,

a signal-generating unit that generates a driving signal including: a first signal-element for causing the pressure-generating chamber to expand, a second signal-element for causing the pressure-generating chamber to contract from an expanding state thereof in order to eject a drop of the liquid through the nozzle, and a third signal-element for causing the pressure-generating chamber to expand to an original state before outputting the first signal-element after the drop of the liquid is ejected, and

a pressure-generating unit that causes the pressure-generating chamber to expand and contract, based on the driving signal,

wherein

the third signal-element includes:

a first-step element for causing the pressure-generating chamber to expand to an intermediate contracting state, which is smaller than the original state before outputting the first signal-element, and

a second-step element for causing the pressure-generating chamber of the intermediate contracting state to the original state before outputting the first signal-element, and

the first-step element and the second-step element are substantially discontinuous in at least one of applying time or inclination.

2. A liquid ejecting apparatus according to claim 1, wherein:

a middle-step element for causing the pressure-generating chamber to maintain the intermediate contracting state is provided

between the first-step element of the third signal-element and the second-step element of the third signal-element.

3. A liquid ejecting apparatus according to claim 2, wherein:

a time T1 from an end time of outputting of the second signal-element to an end time of outputting of the first-step element of the third signal-element and a time T2 from the end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 < T2 \times 1/2$.

4. A liquid ejecting apparatus according to claim 3, wherein:

the time T1 from the end time of outputting of the second signal-element to the end time of outputting of the first-step element of the third signal-element and the time T2 from the end time of outputting of the second signal-element to the end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 \leq T2 \times 1/4$.

5. A liquid ejecting apparatus according to claim 1, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be substantially equal to the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

6. A liquid ejecting apparatus according to claim 1, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be variable depending on the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

7. A liquid ejecting apparatus according to claim 1, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 20 % of an amplitude Vd

of the second signal-element.

8. A liquid ejecting apparatus according to claim 7, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 15 % of an amplitude Vd of the second signal-element.

9. A liquid ejecting apparatus according to claim 1, wherein:

the first-step element and the second-step element are continuous, and

an inclination of the first-step element until a connecting portion to the second-step element and an inclination of the second-step element after the connecting portion to the first-step element are different from each other.

10. A liquid ejecting apparatus according to claim 9, wherein:

the inclination of the first-step element until the connecting portion to the second-step element is lower than the inclination of the second-step element after the connecting portion to the first-step element.

11. A liquid ejecting apparatus according to claim 1, wherein:

the pressure-generating unit has a longitudinal-mode piezoelectric vibrating member.

12. A controlling unit that controls a liquid ejecting apparatus including: a pressure-generating chamber having an inside space whose volume is changeable, into which a liquid is supplied and which is communicated with a nozzle, a resonance frequency of said pressure-generating chamber having a period of Tc; and a pressure-generating unit that causes the pressure-generating chamber to expand and contract, based on a driving signal; comprising

a signal-generating unit that generates a driving signal including: a first signal-element for causing the pressure-generating chamber to expand, a second signal-element

for causing the pressure-generating chamber to contract from an expanding state thereof in order to eject a drop of the liquid through the nozzle, and a third signal-element for causing the pressure-generating chamber to expand to an original state before outputting the first signal-element after the drop of the liquid is ejected,

wherein

the third signal-element includes:

a first-step element for causing the pressure-generating chamber to expand to an intermediate contracting state, which is smaller than the original state before outputting the first signal-element, and

a second-step element for causing the pressure-generating chamber of the intermediate contracting state to the original state before outputting the first signal-element, and

the first-step element and the second-step element are substantially discontinuous in at least one of applying time or inclination.

13. A controlling unit according to claim 12, wherein:

a middle-step element for causing the pressure-generating chamber to maintain the intermediate contracting state is provided between the first-step element of the third signal-element and the second-step element of the third signal-element.

14. A controlling unit according to claim 13, wherein:

a time T1 from an end time of outputting of the second signal-element to an end time of outputting of the first-step element of the third signal-element and a time T2 from the end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 < T2 \times 1/2$.

15. A controlling unit according to claim 14, wherein:

the time T1 from the end time of outputting of the second

signal-element to the end time of outputting of the first-step element of the third signal-element and the time T2 from the end time of outputting of the second signal-element to the end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 \leq T2 \times 1/4$.

16. A controlling unit according to claim 12, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be substantially equal to the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

17. A controlling unit according to claim 12, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be variable depending on the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

18. A controlling unit according to claim 12, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 20 % of an amplitude Vd of the second signal-element.

19. A controlling unit according to claim 12, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 15 % of an amplitude Vd of the second signal-element.

20. A controlling unit according to claim 12, wherein:

the first-step element and the second-step element are continuous, and

an inclination of the first-step element until a connecting portion to the second-step element and an inclination of the second-step element after the connecting portion to the first-step

element are different from each other.

21. A controlling unit according to claim 20, wherein:

the inclination of the first-step element until the connecting portion to the second-step element is lower than the inclination of the second-step element after the connecting portion to the first-step element.